EXHIBIT D

CERTIFICATION FOR TRANSLATION

As a below named translator, I hereby declare that my residence and citizenship are as stated below next to my name and I hereby certify that I am conversant with both the English and Korean languages and the document enclosed herewith is a true English translation of Draft with respect to KPA No 10-2003-007493, which the translation is accurate.

NAME OF THE TRANSLATOR : Jee-Sun KANG

SIGNATURE/DATE : Jee Sun KANG 2011.04.15

RESIDENCE : MIHWA BLDG., 110-2, MYONGRYUN-DONG 4-GA, CHONGRO-GU, SEOUL 110-524, KOREA

CITIZENSHIP : REPUBLIC OF KOREA

Translation of Priority Document

THE KOREAN INTELLECTUAL PROPERTY OFFICE

This is to certify that annexed hereto is a true copy from the records of the Korean Industrial property Office of the following application as filed

Application Number : Korean Patent Application No. 10-2003-0007493

Date of Application : February 06, 2003

Applicant(s) : Samsung Electronics Co., Ltd.

COMMISSIONER

English Translation of Korean Draft Application

Case	Draft Application	Date	2003/2/5
Dispatch Date	2003/2/5	Receipt Date	2003/2/6
Title	Draft Application		
Opinion			

Name of File	Description of File
GK-200210-032 (P0211152)	Draft Application

a written request of reviewing a draft Application (a returning document)

Reception (Invention Department)	North America Exportation Lab. (Wireless), LIM SEOK HUN
Sending (Patent Department)	Telecommunication Network R&D Center, Intellectual Property Team, Assistant manager Kang Min Jung , 031-279-5033
Receipt Number of Invention Disclosure	GK-200210-032-1
Title of Invention Disclosure	Conversion of Phone Setting Value by Using Timer
Title of Invention	method of changing setting of user setting menu in a mobile terminal

An attached draft application is prepared in a patent office based on the Invention discloses, so please reviewing the draft application to include an intention of an inventor and a right of the invention and then return (sending) it to the person in charge of the invention management team by 'Single' [( ) common- within a week after receiving it, (v) urgency - immediately after receiving it]

[opinions of reviewing the draft by the inventor] corrections : existing ( ) / non existing(O)

0 corrections are not existed : Please write a reviewer and then return it to the person in charge of the invention management team by 'Single'

0 corrections are existed : Deleting words mark with a square bracket ([]) and a red color, Adding words mark with an underline (__) and a blue color.
Ex.) when deleting words : [0 0 0]
when adding words : 0 0 0

other corrections - please record it a below <other opinions> and then return it by 'Single'

<other opinions> :

(Name of the reviewer) / (Date of the review)

[Opinions of reviewing the draft by Intellectual Property Team]

(Name of the person in charge) / (Date of the review)

[Opinions of reviewing the draft by the Patent Office] <Number of the Patent Office: P0211152>

a face-to-face talk with the inventor : do(✓) do not( ) etc.( )

Chol Geum Sik / 2003.02.05

KJ LEE Patent Office TEL: 02-744-0305 FAX: 02-743-5248

(Time Charge : A domestic individual bill)

the outcome of the review		a reviewer (A person in charge of the application)
YES	NO	

Reception : Samsung Electronics, Telecommunication Network R&D Center, Intellectual Property Team

Sending : KJ Lee Patent Office

(T/C Manager: Choi Eun Sook)

Title : Claiming a total amount for KR application

A date of charging: 2003, 02, 05

Our Ref.	P0211152	SEC Ref No	GK-200210-032

1. Details

Common Matter	title of Invention					
	filing number				Class	A
Application	filing date		Date of a domestic authorization	2002.11.25	request for examination	O
	Independent /dependent claims		Number of page		Number of drawings	

2. Time Charge Billing Records

Date	Details of Billing Records(A contract Item)	A person in charge	B/R	Time	Amount
2003.01.08	Reviewing the Invention Disclosure	Choi Geum Sik	[redacted]	[redacted]	[redacted]
2003.01.09	Meeting with an Inventor and a person in charge of the application	Choi Geum Sik	[redacted]	[redacted]	[redacted]
2003.01.16	Comparing with the prior Art	Choi Geum Sik	[redacted]	[redacted]	[redacted]
2003.01.23 2003.01.30	Preparing and reviewing a draft of drawings	Choi Geum Sik	[redacted]	[redacted]	[redacted]
2003.01.24 2003.01.25 2003.02.04 2003.02.05	Preparing a draft application	Choi Geum Sik	[redacted]	[redacted]	[redacted]
-	Revising the draft application reflecting the opinions of the inventor and the person in charge of the application	Choi Geum Sik	[redacted]	-	-
Total amount of this bill				[redacted]	[redacted]
Note					

comments: The items of the details Time Charge disclosed in the T/C contract are only accepted for an expanse.

3. A domestic Total Billing Records

Items	A kind of Charges		Sum [the money unit : Won]
Service Fees	T/C	- our service fees for this invention	
	a flat fee	- fee for preparing the drawings (page of figures * the unit price)	
		- fee for translation (S class : English -> Korean)	
Official Fees	Application	- filing new patent application /Request for examination /claiming priority /Revising	
Total amount			

enclosed herewith : the related documents (i.e., a specification etc.), documentary evidence (i.e., receipt etc.)

KJ LEE Patent Office

[ABSTRACT OF THE DISCLOSUSRE]

[ABSTRACT]

A method of automatically changing the setting of user setting menu options at a time in a mobile terminal. A user selects user setting menu options and registers them as setting categories in connection with setting values in a scheduling setting group. He sets a scheduling timer to a timing value for providing timing for changing the settings of the selected user setting menu options and activates the scheduling timer when a scheduling setting mode is set. The settings of the user setting menu options are changed to the setting values of the setting categories at the timing of the scheduling timer.

[REPRESENTATIVE FIGURE]

Figure 7

[INDEX]

Mobile Terminal, User Setting Menu Options, Changing Setting, Timer

[SPECIFICATION]

[TITLE OF THE INVENTION]

METHOD OF CHANGING SETTING OF USER SETTING MENU IN A MOBILE TERMINAL

[BRIEF DESCRIPTION OF THE DRAWINGS]

FIG. 1 is a block diagram of a mobile terminal to which the present invention is applied;

FIG. 2 is a flowchart illustrating an operation for registering a scheduling setting group according to an embodiment of the present invention;

FIG. 3 illustrates examples of menu displays for registering a scheduling setting group according to the embodiment of the present invention;

FIG. 4 illustrates the structure of a scheduling setting table according to the embodiment of the present invention;

FIG. 5 is a flowchart illustrating an operation for setting a scheduling setting mode according to the embodiment of the present invention;

FIG. 6 illustrates examples of menu displays for scheduling timer registration according to the embodiment of the present invention; and

FIG. 7 is a flowchart illustrating an operation for changing the settings of user setting menu options as scheduled according to the embodiment of the present invention.

[DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENT]

[OBJECT OF THE INVENTION]

[RELATED FIELD AND PRIOR ART OF THE INVENTION]

The present invention relates generally to a mobile terminal, and in particular, to a method of changing the setting of a user setting menu option in a mobile terminal.

A mobile terminal contains various functions that a user can selectively invoke. To make the mobile terminal easier to use, a menu is displayed which contains menu options corresponding to respective functions. Each menu option can be further branched into sub-menu options, each sub-menu option can be branched, and so on. Thus, the menu can be represented as a tree structure.

Depending on whether a user is allowed to configure his phone preferences, menu options are categorized into two groups. One group is menu options that the user is allowed only to use, for example, Game, Calculator, Memo Pad, Number Search, Last Number Dialed, Last Number Received, etc. The other group is menu options that the user is allowed to set conditionally, for example, Menu Setup, Background Image, Alarm, Alert Type, Tones, Brightness, and Roaming. The setting of a menu option in the second group depends on user selection. If the user selects Alert Type branched into sub-menu options Ring/Melody, Vibration, Silencing (Only Light), Ring+Vibra, and Vibra+Ring and then selects Ring/Melody, Alert Type is set to Ring/Melody. This option allows ringer tones or a melody to be played for incoming calls. If the user selects Vibration, Alert Type is reset to Vibration. Thus upon incoming of a call, the mobile terminal vibrates. These menus (menu options) that allow the user to configure his phone preference are called "user setting menus (menu options)".

Conventionally, the user manually changes the setting of user setting menu

options. Without changing, the setting is maintained. Accordingly, the user must manage to change the setting manually when necessary. It may occur that the user forgets to change the setting when etiquette requires. For example, the user may bother others around at a conference in a ring/melody mode, or he cannot perceive incoming of a call in a noisy street in a vibration mode.

In this context, many phone setting methods have been proposed to allow the user to reserve the settings of user setting menu options according to his schedule, such as Alert Type, Ring Tones and Volume, Connect to Voicemail, and Alarm Type, so that the settings of the user setting menu options are automatically changed. According to these reservation setting methods, if the user decides a setting state for a user setting menu and sets a timer to an intended timing value, the user setting menu is changed to the state as scheduled.

[SUBSTANTIAL MATTER OF THE INVENTION]

Despite the advantage of automatic changing the settings of the user setting menus as scheduled, the above methods have limitations in adaptively satisfying a variety of user schedules. The user schedule varies by season, at the beginning or end of the month, on holidays, or in week days, etc. Since the settings of the user setting menus are changed only to the decided states and reservation setting is available only to a few predetermined user setting menus, the conventional menu setting methods are limited to satisfy user demands.

It is, therefore, an object of the present invention to provide a method of

allowing a user to select a plurality of user setting menu options and automatically changing the settings of the user setting menu options according to his schedule.

It is another object of the present invention to provide a method of automatically changing at a time the setting values of selected user menu options that vary according to a user schedule.

It is a further object of the present invention to provide a method of automatically changing the settings of a plurality of user setting menu options by simple user manipulation, adaptively according to a changed user schedule.

[CONSTRUCTION AND OPERATION OF THE INVENTION]

To achieve the above objects, in method of automatically changing the setting of user setting menu options at a time in a mobile terminal, a user selects user setting menu options and registers them as setting categories in connection with setting values in a scheduling setting group. He sets a scheduling timer to a timing value for providing timing for changing the settings of the selected user setting menu options and activates the scheduling timer when a scheduling setting mode is set. The settings of the user setting menu options are changed to the setting values of the setting categories at the timing of the scheduling timer.

A preferred embodiment of the present invention will be described herein below with reference to the accompanying drawings. In the following description, well-

known functions or constructions are not described in detail since they would obscure the invention in unnecessary detail.

FIG. 1 is a block diagram of a mobile terminal to which the present invention is applied. Referring to FIG. 1, a microprocessor unit (MPU) 100 changes the setting of a user setting menu according to the present invention as well as performs traditional functions such as processing and control of telephone calls, messages, and data communications. A read only memory (ROM) 102 stores micro-codes for operation and control programs of the MPU 100 and look-up data. A random access memory (RAM) 104 serves as a working memory for the MPU 100. A flash RAM 106 provides an area in which data to be updated is stored. A keypad 108 includes numeric keys 0 to 9, and function keys like *, #, Send, Clear, End, Volume, and softkeys and provides key input data corresponding to a pressed key to the MPU 100. A display 110 visually displays image information received from the MPU 100. A coder-decoder (CODEC) 112 connected to the MPU 100 and a microphone 114 and a speaker 116 that are connected to the CODEC 112 are voice input/output blocks used for phone calls and voice recording. A radio frequency (RF) module 120 transmits/receives RF signals to/from a base station (BS). It modulates a transmission signal received from the MPU 100 and transmits the modulated RF signal through an antenna 118. It also demodulates an RF signal received through the antenna 118 and provides the demodulated signal to the MPU 100 through a baseband processor 122. The baseband processor 122 processes baseband signals exchanged between the RF module 120 and the MPU 100.

According to the present invention, a user freely selects a plurality of user

setting menu options according to his schedule, decides their setting values, and registers the user setting menu options as setting categories under a scheduling setting group having a unique identifier (ID). A plurality of scheduling setting groups can be registered when necessary. That is, the user can select different sets of user setting menu options and register each set of user setting menu options under a different scheduling setting group.

FIG. 2 is a flowchart illustrating an operation in the MPU 100 illustrated in FIG. 1 for registering a scheduling setting group according to an embodiment of the present invention.

Referring to FIG. 2, when the user selects a Setting Group Registration menu using the keypad 108, the MPU 100 displays the Setting Group Registration menu on the display 110 in step 200 and awaits selection of a menu option in step 202. The Setting Group Registration menu is added to traditional menus provided in the mobile terminal according to the present invention. It is denoted by reference numeral 300 in FIG. 3. The Setting Group Registration menu 300 has three menus, LCD Screen, Alert Type, and Roaming. The LCD Screen menu 302 is displayed together with menu options Menu Style and Background Image when the user selects the LCD Screen menu. The Background Image 304 is displayed with sub-menu options Camera and Basic when the user selects Background Image.

If the user selects Camera, a picture taken by a camera (not shown) of the mobile terminal is displayed as a background image. On the other hand, if the user

selects Basic, an image stored in the flash RAM 106 is displayed as the background image.

The Alert Type menu under the Setting Group Registration menu 300 is branched into Ring/Melody, Vibration, Silencing (Only Light), Ring+Vibra, and Vibra+Ring. The Roaming menu is set to On for roaming over a preset mobile communication network. In this example, Camera and Basic under the LCD Screen menu, Ring/Melody, Vibration, Silencing (Only Light), Ring+Vibra, and Vibra+Ring under the Alert Type menu, and On under the Roaming menu are actual user setting menu options.

When the user selects one of the menu options under the Setting Registration menu 300 using the keypad 108 in step 202, the MPU 100 performs steps 204 to 208, or steps 204 to 216 depending on the presence or absence of a sub-menu option under the selected menu option. If the user selects the LCD Screen menu which is further branched, its menu options are displayed as indicated by reference numeral 302 in step 206 and the MPU 100 awaits selection of a sub-menu option in step 208. If the user selects one of the sub-menu options using the keypad 108, the MPU 100 returns to step 204 and then performs step 210 or steps 206 to 208 depending on the presence or absence of a further sub-menu option under the selected sub-menu option.

In the absence of any sub-menu option, the MPU 100 registers the selected ultimate menu option with the selected setting value as a setting category in step 210. For example, if the user selects Camera for Background Image 304, Camera is marked

with "√" and Background Image is registered together with its setting value indicating Camera as a setting category under a scheduling setting group. According to whether the setting category registration is completed or not in step 212, steps 200 to 208 are repeated or the MPU 100 proceeds to step 214. Upon input of a key for registering another user setting menu as a setting category in the scheduling setting group, steps 200 to 210 are repeated. On the other hand, upon input of a key for completing the setting category registration, step 214 is performed. For example, when a test message is displayed, asking whether the scheduling setting group registration is completed, the user presses the Send key if he is to register another user setting menu option as a setting category, or the End key if he wants to complete the registration.

If the user presses the End key, the MPU 100 prompts the user to enter the ID of the registered schedule setting group and receives the ID through the display 110 in step 214. In step 216, the MPU 100 assigns the ID to the scheduling setting group containing setting categories registered in steps 200 to 212 and registers the scheduling setting group as a new one in the flash RAM 106, using its ID as an index.

As described above, the user freely selects some or all of user setting menu options according to his schedule, sets the settings of the selected user setting menu items, and registers them with their setting values as setting categories in a scheduling setting group. If he further registers another scheduling setting group, he follows the same procedure of steps 200 to 216. For example, the user selects user setting menu options the settings of which he wants to change while at home on holidays, and registers them in connection with their setting values in a scheduling setting group with

an ID of 1. The user then selects user setting menu options the settings of which he wants to change while at work in his office and registers them in connection with their setting values in another scheduling setting group with an ID of 2. In this manner, differential scheduling setting groups can be produced for respective occasions such as upcoming conference, performance, lecture class, birthday party, etc.

In accordance with the present invention, in view of the menu tree, the MPU 100 manages, for each scheduling setting group, registered setting categories with their setting values in a tree structure of main category-sub category 1-sb-category 2-. . . , that is, in a layered scheduling setting table in the flash RAM 106. The main category corresponds to top menus, sub-category 1 corresponds to menu options for the top menus, and sub-category 2 corresponds to sub-menu options for the menu options.

Taking the example illustrated in FIG 3, the scheduling setting table has main category fields 400, 402 and 404 representing LCD Screen, Alert Type, and Roaming, respectively in the Setting group Registration menu, sub-category 1 fields 406 and 408 representing Menu Style and Background Image for the LCD Screen menu, sub-category 1 fields representing Ring/Melody, Vibration, Silencing (Only Light), Ring+Vibra, and Vibra+Ring for the Alert Type menu, sub-category 2 fields 410 and 412 representing sub-menu options, for example, Round and Basic for Menu Style, and sub-category 2 fields 414 and 416 representing Camera and Basic for Background Image.

Each of the main category fields and sub-category fields occupies 1 bit. Each

field is set to logic 1 if a corresponding menu (menu option) is selected or to logic 0 if the menu (menu option) is not selected. From the scheduling setting table illustrated in FIG. 4, it is noted that the user has sequentially selected LCD Screen for Setting Group Registration, Background Image for LCD Screen, and Camera for Background Image.

As illustrated in FIGs. 3 and 4, user setting menus (menu options) available to the mobile terminal are arranged in the Setting Group Registration menu to make the mobile terminal easier to use. Furthermore, listing the user setting menus and menu options with their 1-bit setting values in the scheduling setting table illustrated in FIG. 4 minimizes the memory capacity that scheduling setting groups occupy. That is, since logic 1 is stored only for selected or set menus and menu options, a memory capacity requirement is remarkably reduced relative to a conventional method of storing setting values on a byte basis.

The user selects one of the registered scheduling setting groups, sets a scheduling timer, registers the timer value, and sets a scheduling setting mode. Alteration of the setting of the selected scheduling setting group is then activated. The scheduling timer allows the user to set timing values for changing the setting of the setting categories with logic 1s. The scheduling timer can be, for example, an appointment timer, a length timer, a period timer, or a repetition time. The appointment timer gives an alarm at a designated time. The length timer gives an alarm when a predetermined time elapses and the period timer informs the user of the start and end of a predetermined period. The repetition timer gives an alarm at every predetermined time interval. The alarm interval is set on a year, quarter of the year, month, or day basis. If

the user wants to change the settings of the selected user setting menu options at a desired time every day, the repetition timer is used.

FIG. 5 is a flowchart illustrating an operation for setting a Scheduling Setting menu in the MPU 100 according to the embodiment of the present invention. Referring to FIG. 5, when the user selects the Scheduling Setting menu using the keypad 108, the MPU 100 displays the Scheduling Setting menu on the display 118 in step 500 and awaits selection of a scheduling setting group in step 502. The Scheduling Setting menu is added to the traditional menus provided in the mobile terminal according to the present invention. It is denoted by reference numeral 600 in FIG. 3. The Scheduling Setting menu 600 contains Setting ID 1, Setting ID 2, and Setting ID 3 indicating that three scheduling setting groups have been registered. If the user selects Setting ID 1, a display 602 is provided. In the Setting ID 1 menu, the user selects one of four timers to register a scheduling timer.

When the user selects one of the scheduling setting groups in the Scheduling Setting menu 600 using the keypad 108, the MPU 100 displays the Scheduling Timer Registration menu 602 in step 504. When the user selects at least one of the scheduling timers and sets a timing value for the scheduling timer, the MPU 100 registers the selected scheduling timer with the timing value in step 506.

If an appointment timer is selected, the timer is set to a value indicating a desired time when the setting of a user setting menu option is to be changed. In the case of a length timer, the timer is set to a value indicating the time between the current time

and a desired time when the setting of a user setting menu option is to be changed. If a period timer is selected, its timing value indicates a time when the setting of a user setting menu option is to be changed and a time when the user setting menu option is reset. If a repetition timer is selected, it is set to a desired time with an interval unit. In FIG. 6, the appointment timer is marked with "√" as a scheduling timer in the Scheduling Timer Registration menu 602, by way of example.

In step 508, the MPU 100 determines whether the user has set a scheduling setting mode. Here, a text message is displayed on the display 110, asking whether the scheduling setting mode is to be set or not. If the user wants to, he presses the Send key and if he doesn't, he presses the End key. In the former case, the MPU 100 activates the scheduling timer in step 510 and terminates this procedure. In the latter case, the MPU 100 directly terminates the procedure.

FIG. 7 is a flowchart illustrating an operation for changing the settings of user setting menu options as scheduled according to the embodiment of the present invention.

Referring to FIG. 7, after the scheduling timer is registered and the scheduling setting mode is set, the MPU 100 determines which type the scheduling timer is in step 700. If it is a period timer, the MPU 100 proceeds to step 702. Otherwise, the MPU 100 jumps to step 706.

In step 706, the MPU 100 changes the settings of menu options corresponding to setting categories to their registered values, under a scheduling setting group which

was set to the scheduling setting mode. Thus the settings of the menu options are changed at a time.

In the case of a period timer, the MPU 100 determines whether start timing or end timing has been reached in step 702. The timings can be discriminated using a flag. The flag is set at a first timing of the period timer and reset at the following timing. At the start timing, the current setting values of the menu options are stored in the flash RAM 106 in step 704 and the MPT 100 proceeds to step 706. The stored setting values are used to return the menu options to their original states at the end timing.

At the end timing, the MPU 100 returns the menu options to the stored values in step 708 and deletes the stored values from the flash RAM 106 in step 710. Thus, the settings of menu options corresponding to the setting categories of a scheduling setting group in the scheduling setting mode are changed simultaneously at the start timing of a predetermined period and returned to their original states at the end timing.

In accordance with the present invention as described above, the user freely selects user setting menu options according to his variable schedule and registers them in different scheduling setting groups. He selects one of the scheduling setting groups, registers a scheduling timer for the selected scheduling setting group, and sets the selected scheduling setting group to a scheduling setting mode. Then the settings of the user setting menu options are automatically changed simultaneously at a desired time.

For example, if the user makes out a daily or monthly schedule and decides the

settings of user setting menu options according to his schedule, the settings are changed automatically and simultaneously. Differential scheduling setting groups are registered according to a variable schedule and a corresponding scheduling setting group is selected and set to a scheduling setting mode by simple manipulation if the schedule is changed. This obviates the need for reservation setting for each user setting menu option according to the changed schedule.

While the invention has been shown and described with reference to a certain preferred embodiment thereof, it will be understood by those skilled in the art that various changes in form and details may be made therein without departing from the spirit and scope of the invention as defined by the appended claims.

[EFFECTS OF THE INVENTION]

In accordance with the present invention as described above, the user freely selects user setting menu options according to his variable schedule and registers them in different scheduling setting groups. He selects one of the scheduling setting groups, registers a scheduling timer for the selected scheduling setting group, and sets the selected scheduling setting group to a scheduling setting mode. Then the settings of the user setting menu options are automatically changed simultaneously at a desired time

[PATENT CLAIMS]

1. A method of changing the setting of user setting menu options in a mobile terminal, the user setting menu options being menu options the settings of which a user can change, comprising the steps of:

registering user setting menu options selected by the user among menu options available in the mobile terminal as setting categories in connection with setting values selected by the user in a scheduling setting group;

setting a scheduling timer to a timing value for providing a timing for changing the settings of the selected user setting menu options and activating the scheduling timer when a scheduling setting mode is set; and

changing the settings of the user setting menu options to the setting values of the setting categories at the timing of the scheduling timer.

2. The method of claim 1, wherein the scheduling timer is at least one of an appointment timer for providing a timing at a first predetermined time, a length timer for providing a timing when a second predetermined time elapses, a period timer for providing a timing at the start and end of a predetermined period, and a repetition timer for providing a timing at every predetermined time interval.

3. The method of claim 2, wherein the settings changing step comprising the steps of:

storing the setting values of the user setting menu options corresponding to the setting categories in response to the timing provided at the start time of the period by

the period timer;

changing the setting values of the user setting menu options to the setting values of the setting categories; and

returning the user setting menu options to the stored setting values in response to the timing provided at the end time of the period by the period timer.

4. A method of changing the setting of user setting menu options in a mobile terminal, the user setting menu options being menu options the settings of which a user can change, comprising the steps of:

registering user setting menu options selected by the user among menu options available in the mobile terminal as setting categories in connection with setting values selected by the user in a scheduling setting group having a unique identifier (ID);

setting a scheduling timer to a timing value for providing a timing for changing the settings of user setting menu options registered as setting categories in a scheduling setting group selected from at least one scheduling setting group and activating the scheduling timer when a scheduling setting mode is set; and

changing the settings of the user setting menu options in the selected scheduling setting group to the setting values of the setting categories at the timing of the scheduling timer.

5. The method of claim 4, wherein the scheduling timer is at least one of an appointment timer for providing a timing at a first predetermined time, a length timer for providing a timing when a second predetermined time elapses, a period timer for providing a timing at the start and end of a predetermined period, and a repetition timer

for providing a timing at every predetermined time interval.

6. The method of claim 5, wherein the settings changing step comprising the steps of:

storing the setting values of the user setting menu options corresponding to the setting categories in the selected scheduling setting group in response to the timing provided at the start time of the period by the period timer;

changing the setting values of the user setting menu options to the setting values of the setting categories; and

returning the user setting menu options to the stored setting values in response to the timing provided at the end time of the period by the period timer.

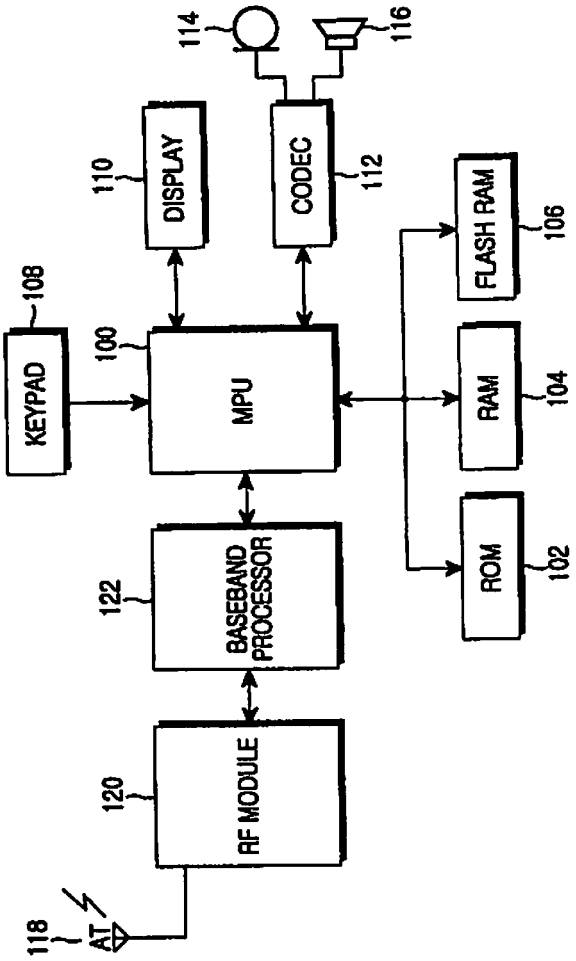
114
116
DISPLAY
110
CODEC
112
FLASH RAM
106
108
KEYPAD
100
MPU
RAM
104
BASEBAND PROCESSOR
122
ROM
102
RF MODULE
120
118
ANT

FIG.1

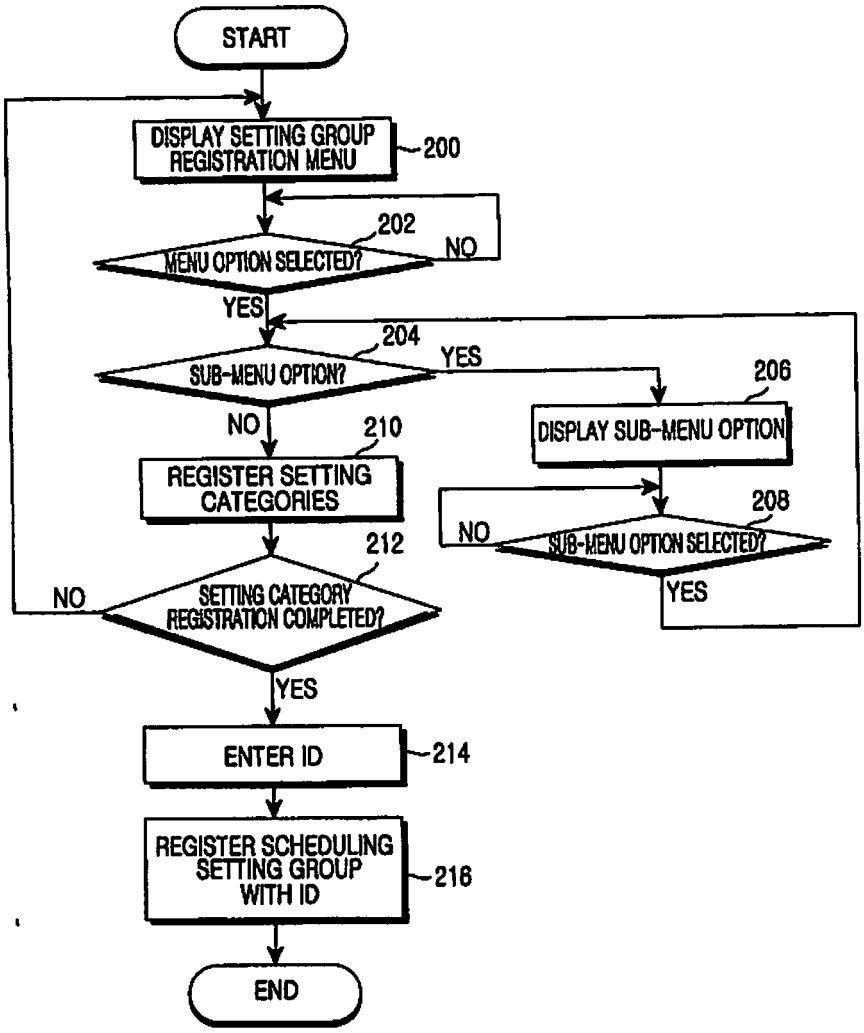
START
DISPLAY SETTING GROUP REGISTRATION MENU
200
202
MENU OPTION SELECTED?
NO
YES
204
SUB-MENU OPTION?
YES
206
DISPLAY SUB-MENU OPTION
NO
210
REGISTER SETTING CATEGORIES
208
NO
SUB-MENU OPTION SELECTED?
YES
212
NO
SETTING CATEGORY REGISTRATION COMPLETED?
YES
ENTER ID
214
REGISTER SCHEDULING SETTING GROUP WITH ID
216
END

FIG.2

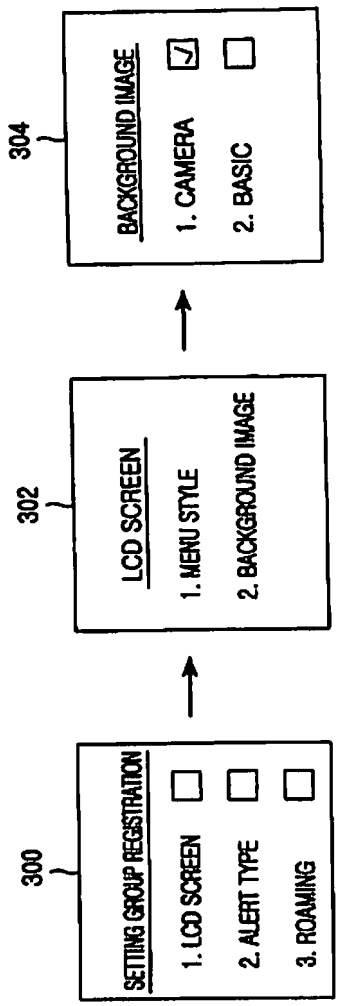
300
SETTING GROUP REGISTRATION
1. LCD SCREEN
2. ALERT TYPE
3. ROAMING
302
LCD SCREEN
1. MENU STYLE
2. BACKGROUND IMAGE
304
BACKGROUND IMAGE
1. CAMERA
2. BASIC

FIG.3

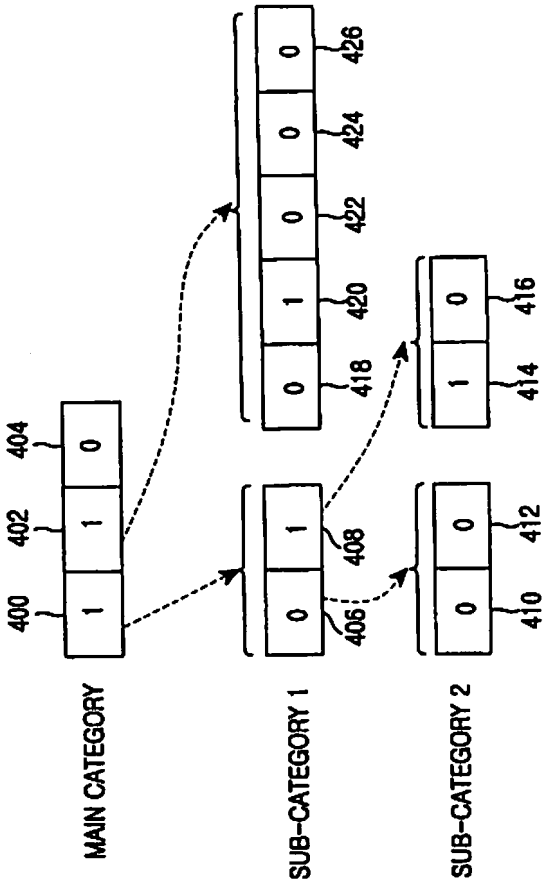
MAIN CATEGORY
SUB-CATEGORY 1
SUB-CATEGORY 2
400
402
404
406
408
410
412
414
416
418
420
422
424
426
1
1
0
0
1
0
1
0
1
0
0
0
0

FIG.4

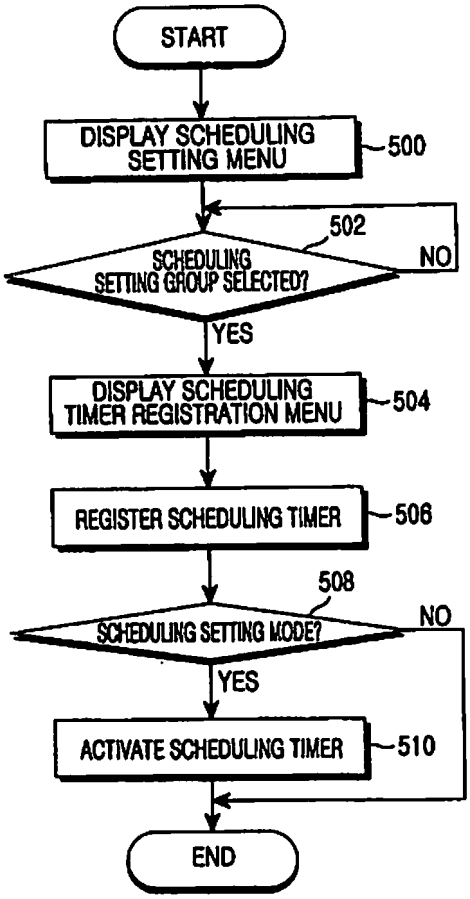
START
DISPLAY SCHEDULING SETTING MENU
500
502
SCHEDULING SETTING GROUP SELECTED?
NO
YES
DISPLAY SCHEDULING TIMER REGISTRATION MENU
504
REGISTER SCHEDULING TIMER
506
508
SCHEDULING SETTING MODE?
NO
YES
ACTIVATE SCHEDULING TIMER
510
END

FIG.5

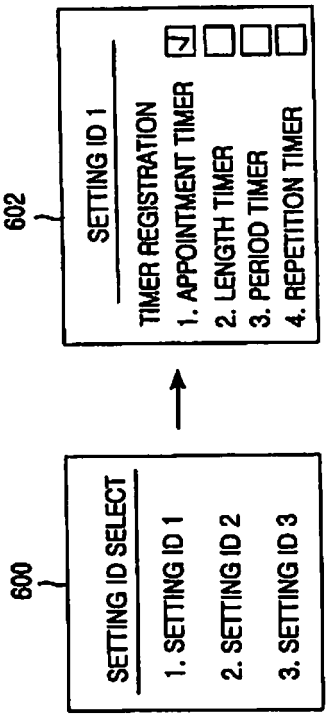
600
SETTING ID SELECT
1. SETTING ID 1
2. SETTING ID 2
3. SETTING ID 3
602
SETTING ID 1
TIMER REGISTRATION
1. APPOINTMENT TIMER
2. LENGTH TIMER
3. PERIOD TIMER
4. REPETITION TIMER

FIG.6

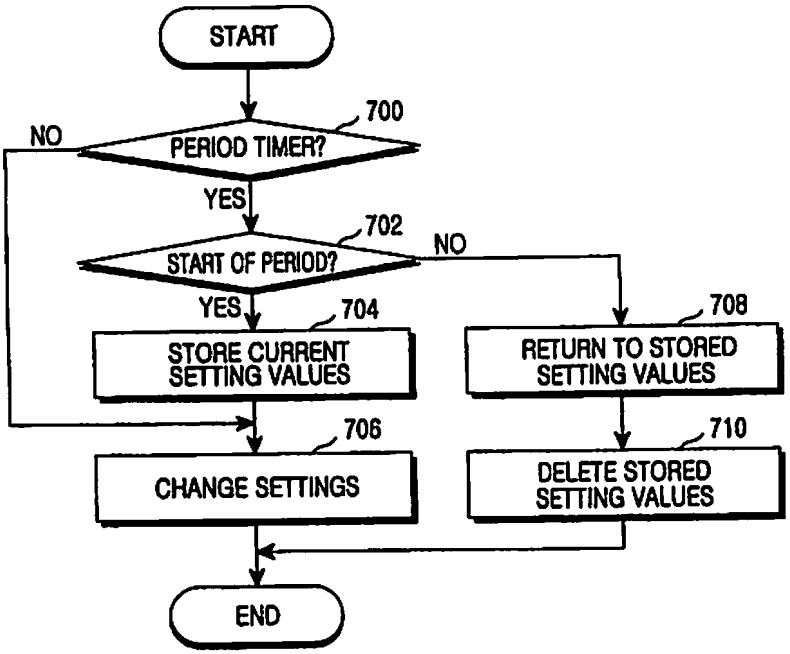
START
700
PERIOD TIMER?
NO
YES
702
START OF PERIOD?
NO
YES
704
STORE CURRENT SETTING VALUES
708
RETURN TO STORED SETTING VALUES
706
CHANGE SETTINGS
710
DELETE STORED SETTING VALUES
END

FIG.7